New Approaches in the Differentiation of Human Embryonic Stem Cells and Induced Pluripotent Stem Cells toward Hepatocytes.

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Funding Grants: An in vitro and in vivo comparison among three different human hepatic stem cell populations.

Public Summary:
Orthotropic liver transplantation is the only established treatment for end-stage liver diseases. Utilization of hepatocyte transplantation and bio-artificial liver devices as alternative therapeutic approaches requires an unlimited source of hepatocytes. Stem cells, especially embryonic stem cells, possessing the ability to produce functional hepatocytes for clinical applications and drug development, may provide the answer to this problem. New discoveries in the mechanisms of liver development and the emergence of induced pluripotent stem cells in 2006 have provided novel insights into hepatocyte differentiation and the use of stem cells for therapeutic applications. This review is aimed towards providing scientists and physicians with the latest advancements in this rapidly progressing field.

Scientific Abstract:
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